In the Claims:

1. **(Currently Amended)** A processor-readable medium comprising processor-executable instructions for mapping color data, the processor-executable instructions comprising instructions for:

adjusting a degree to which BG color coefficient generation is similar for process-neutral and K-only neutral images to produce BG coefficients;

adjusting a degree to which UCR color coefficient generation is similar for process-neutral and K-only neutral images to produce UCR coefficients; and

mapping CMY color data to CMYK color data using the produced BG coefficients and the produced UCR coefficients, wherein the mapping includes instructions for:

moving points in a process-neutral color space, thereby mapping the CMYK data to reduce color in neutral colors in process-neutral images, wherein moving points in a process-neutral color space includes instructions for:

mapping the process-neutral color space into a color space defined in Lab;

establishing a first vector between a point on a neutral axis and a point having a neutral hue;

establishing a second vector through the point on the neutral axis and a point to be moved and a point on a boundary of the color space defined in Lab;

establishing a third vector through the point having neutral hue and the point on the boundary of the color space defined in Lab;

establishing a fourth vector bisecting the second and the third vectors;

projecting the point to be moved onto the fourth vector; and

using formulas based on lengths of the vectors to move the point to be moved to a new location in the color space defined in Lab having similar L value.

2. **(Original)** The processor-readable medium as recited in claim 1, wherein adjusting the degree to which BG color coefficient generation is similar includes instructions for:

using similar BG coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line;

using dissimilar BG coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line; and

controlling the distance.

3. **(Original)** The processor-readable medium as recited in claim 2, wherein controlling the distance includes instructions for:

setting the distance based on whether the process-neutral and K-only neutral images will be printed side-by-side.

4. (Original) The processor-readable medium as recited in claim 1, wherein adjusting the degree to which UCR color coefficient generation is similar includes instructions for:

using similar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is greater than a distance from a neutral line; and

using dissimilar UCR coefficients for a color in both process-neutral and K-only images, wherein the color is less than the distance from the neutral line.

5. (Original) The processor-readable medium as recited in claim 1, wherein adjusting the degree to which UCR color coefficient generation is similar includes instructions for:

assigning a greater value to UCR coefficients of a minor color; and

assigning a lesser value to UCR coefficients of more dominate colors.

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) The processor-readable medium as recited in ~~claim 7~~ claim 1, wherein using formulas includes instructions for:

mapping values of a and b by adding (dps/(db – constant * vml))*vm(1) and (dps/(db – constant * vml))*vm(2) respectively; and

mapping values of a and b by adding values a and b to the vector vm where the point to be moved is within a circle enclosing the first vector.

9. (Currently Amended) A method of controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, comprising:

generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis;

generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis;

generating similar UCR values for colors within the process-neutral image and the K-only neutral image beyond a second distance from a second neutral axis;

generating dissimilar UCR values for colors within the process-neutral image and the K-only neutral image within the second distance from the second neutral axis; and

mapping CMY color data to CMYK color data using the generated BG coefficients and the generated UCR coefficients, wherein the mapping includes:

adjusting the first and second distances to balance color similarity between the process-neutral image and the K-only neutral image against a smooth transition from colors to neutral within the K-only neutral image.

10. (Cancelled)

11. (Original) The method of claim 9, wherein the mapping includes:

reducing color within a region adjacent to a neutral axis of a process-neutral color space by mapping the process-neutral color space into an Lab color space and moving a point within the Lab color space according to vectors connecting the point within the Lab color space, a point on a neutral axis in the Lab color space, a point on a boundary of the Lab color space and a point having neutral hue.

12. (Original) The method of claim 9, wherein the mapping includes:

mapping colors into a color space defined in Lab; and

mapping each point within the color space defined in Lab, wherein points along a process-neutral axis are mapped to more neutral colors.

13. (Original) The method of claim 12, wherein mapping each point includes:

establishing a first vector between a point on a neutral axis and a point having neutral hue;

establishing a second vector through the point on the neutral axis and a point to be moved and a point on a boundary of the color space;

establishing a third vector through the point having neutral hue and the point on the boundary of the color space;

establishing a fourth vector bisecting the second and the third vectors;

projecting the point to be moved onto the fourth vector; and

using formulas based on lengths of the vectors to move the point to be moved to a new location having a similar L value.

14. (Original) The method of claim 13, wherein using formulas includes:

applying a first formula wherein a point to be moved is within a circle enclosing the first vector; and

applying a second formula wherein the point to be moved is not within the circle enclosing the first vector.

15. (Currently Amended) A color mapping apparatus, comprising:

a BG module to generate BG coefficients for process-neutral and K-only images, and to adjust a degree to which the generation of BG coefficients is similar for the process-neutral and the K-only images;

a UCR module to generate UCR coefficients for process-neutral and K-only images, and to adjust a degree to which the generation of UCR coefficients is similar for the process-neutral and the K-only images; ~~and~~

a mapping module to map CMK color data to CMYK color data using the generated BG coefficients and the generated UCR ~~coefficients.~~ coefficients; and

a neutral axis correction module to reduce color from a neutral axis of a process-neutral color space by moving points in the process-neutral color space to make the neutral axis less colorful, wherein the neutral axis correction module comprises configurations for:

mapping the process-neutral color space into Lab color space;

establishing a first vector between a point on the neutral axis and a point having neutral hue;

establishing a second vector through the point on the neutral axis and a point to be moved and a point on a boundary of the gamut;

establishing a third vector through the point having neutral hue and the point on the boundary of the gamut;

establishing a fourth vector bisecting the second and third vectors;

projecting the point to be moved onto the fourth; and

using formulas based on the vectors to move the point to be moved to a new location having similar L value with less color.

16. (Original) The color mapping apparatus of claim 15, where in the BG module comprises configurations for:

using similar BG coefficients to map a color in both process-neutral and K-only mapping, wherein the color is greater than a distance from a neutral line;

using dissimilar BG coefficients to map a color in both process-neutral and K-only mapping, wherein the color is less than the distance from the neutral line; and

controlling the distance to achieve a desired degree of harmony between the process-neutral and K-only images.

17. (Original) The color mapping apparatus of claim 15, where in the UCR module comprises configurations for:

using similar UCR coefficients to map a color in both process-neutral and K-only mapping, wherein the color is greater than a distance from a neutral line;

using dissimilar UCR coefficients to map a color in both process-neutral and K-only mapping, wherein the color is less than the distance from the neutral line; and

controlling the distance to achieve a desired degree of harmony between the process-neutral and K-only images.

18—19. (Cancelled)

20. (Currently Amended) The color mapping apparatus of ~~claim 19~~claim 15, wherein the neutral axis correction module additionally comprises configurations for:

mapping values of a and b by adding (dps/(db – constant * vml))*vm(1) and (dps/(db – constant * vml))*vm(2) respectively; and

mapping values of a and b by adding them to the vector vm where the point to be moved is within a circle enclosing the correction vector.

21—26. (Cancelled)

27. (Currently Amended) A processor-readable medium comprising processor-executable instructions for controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, the processor-executable instructions comprising instructions for:

generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a distance from a neutral axis;

generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the distance from the neutral axis; ~~and~~

mapping CMY color data to CMYK color data using the generated BG ~~coefficients.~~ coefficients; and

adjusting the distance to balance color similarity between the process-neutral image and the K-only neutral image against a smooth transition to the neutral axis in colors within the K-only neutral image.

28. (Cancelled)

29. (Original) The processor-readable medium as recited in claim 27, wherein the mapping includes instructions for:

reducing color within a region adjacent to the neutral axis by moving most or all points in a process-neutral color space within which the process-neutral axis is defined.

30. (Original) The processor-readable medium as recited in claim 27, wherein the mapping includes instructions for:

reducing color within a region adjacent to the neutral axis within a process-neutral color space by mapping process-neutral colors into an Lab color space and moving a point within the Lab color space according to vectors connecting the point within the Lab color space, a point on the neutral axis, a point on a gamut boundary and a point having neutral hue.

31. **(New)** A method of controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, comprising:

generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis;

generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis;

generating similar UCR values for colors within the process-neutral image and the K-only neutral image beyond a second distance from a second neutral axis;

generating dissimilar UCR values for colors within the process-neutral image and the K-only neutral image within the second distance from the second neutral axis; and

mapping CMY color data to CMYK color data using the generated BG coefficients and the generated UCR coefficients, wherein the mapping includes reducing color within a region adjacent to a neutral axis of a process-neutral color space by mapping the process-neutral color space into an Lab color space and moving a point within the Lab color space according to vectors connecting the point within the Lab color space, a point on a neutral axis in the Lab color space, a point on a boundary of the Lab color space and a point having neutral hue.

32. (New) A processor-readable medium comprising processor-executable instructions for controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, the processor-executable instructions comprising instructions for:

generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a distance from a neutral axis;

generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the distance from the neutral axis; and

mapping CMY color data to CMYK color data using the generated BG coefficients, wherein the mapping includes instructions for:

reducing color within a region adjacent to the neutral axis within a process-neutral color space by mapping process-neutral colors into an Lab color space and moving a point within the Lab color space according to vectors connecting the point within the Lab color space, a point on the neutral axis, a point on a gamut boundary and a point having neutral hue.

33. (New) A method of controlling a degree to which a process-neutral image and a K-only neutral image are harmonized, comprising:

generating similar BG values for colors within the process-neutral image and the K-only neutral image beyond a first distance from a first neutral axis;

generating dissimilar BG values for colors within the process-neutral image and the K-only neutral image within the first distance from the first neutral axis;

generating similar UCR values for colors within the process-neutral image and the K-only neutral image beyond a second distance from a second neutral axis;

generating dissimilar UCR values for colors within the process-neutral image and the K-only neutral image within the second distance from the second neutral axis; and

mapping CMY color data to CMYK color data using the generated BG coefficients and the generated UCR coefficients, wherein the mapping includes:

mapping colors into a color space defined in Lab; and

mapping each point within the color space defined in Lab, wherein points along a process-neutral axis are mapped to more neutral colors, wherein mapping each point includes:

establishing a first vector between a point on a neutral axis and a point having neutral hue;

establishing a second vector through the point on the neutral axis and a point to be moved and a point on a boundary of the color space;

establishing a third vector through the point having neutral hue and the point on the boundary of the color space;

establishing a fourth vector bisecting the second and the third vectors;

projecting the point to be moved onto the fourth vector; and

using formulas based on lengths of the vectors to move the point to be moved to a new location having a similar L value.